# Environmental Community Groups and the Concept of Public Participation in Ocean and Coastal Management

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# AUTHOR'S STATEMENT

Except where otherwise acknowledged, the work in this sub-thesis is my own and does not incorporate any material previously submitted for a degree or diploma in any tertiary institution.

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# ABSTRACT

With the release of the Commonwealth Government's Oceans Policy, governments and many non-government organisations are indicating they want greater public participation in the management of our environment. Their plans to achieve this include increasing awareness and understanding of these environments through education and improved access to information.

This thesis investigates the individuals that comprise 'grass roots' community groups involved in marine and coastal environmental issues — groups with the potential to play an important role in environmental management. It looks at how and where group members source information and how effective the communication of this information is between all parties.

These issues are relatively unexplored, but have far-reaching implications should the Government push ahead with its policy of public involvement in managing Australia's coasts and oceans.

The research involves a case study of three groups centred around Port Phillip Bay, Victoria. Two of the groups are part of the Government program, Coastcare. The third group carries out research into the bay's dolphin population.

The findings reveal that members tended to learn passively. This happened either through social conversation or hands-on experience during working bees or research

trips. Few members accessed written material such as newsletters, booklets and other educational resources.

Such evidence suggests that to raise awareness and understanding of the marine and coastal environment, resources may be more effectively directed into activities that involve hands-on work and personal interaction.

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# CHAPTER 1

# INTRODUCTION

## Background

As environmental community groups grow in number around the world, there is a movement away from the traditional representative systems of government control towards one in which community groups have a greater and more direct influence over community concerns (Carr, 1994). With different types of people involved in environmental decision making and better consultation with governments, Sewell, Dearden and Dumbrell (1989) see local communities heading towards becoming the real conservation practitioners carrying out all aspects of environmental management. The possible consequence of this movement is that the art of communicating environmental problems to the public will fall more and more into the hands of community groups.

This movement is also being supported by governments and their advisory bodies. A report of the Ministerial Advisory Group for Australia's Oceans Policy encourages the facilitation of community participation in the management of marine and coastal environments. It suggests that if the community is meaningfully involved in decision making and on-the-ground actions, a stewardship ethic for our marine environment can develop. The group believes this could result in the community and private industry taking more responsibility for the care of Australia's oceans and coasts. The group also supports a more high-profile public awareness campaign on marine and coastal issues (Ministerial Advisory Group on Oceans Policy, 1998).

For its part, the Commonwealth Government in 1998 released its Oceans Policy (Commonwealth of Australia, 1998a) advocating an increase in community involvement in on-the-ground action and resource-use decision making. The Government has stated in this policy two points regarding public involvement in environmental management:

- that community participation is a key to promoting and instituting a duty of care for the marine environment; and
- that one of its challenges is to improve community understanding of, and involvement in, marine related issues.

There appear to be many advocates of this philosophy of public involvement. The work of Brown (1996) suggests the Landcare Program, a community environmental movement initiated to tackle land and water degradation, is one of these. Eden (1996), however, while seeing a need to promote public participation in policy debates, claims the way to implement such concepts remains unclear. She suggests that if such an environmental policy is to succeed, in addition to looking at the public understanding of the nature and substance of science, we need also to investigate the moral, ethical, cultural and behavioural dimensions of environmental issues, especially those linked to local environments.

With Australia's marine and coastal environments recently receiving considerable attention from both the media and public, this thesis examines aspects of involvement of the 'grass roots' environmental community groups in marine or coastal issues.

## What are Community Groups?

A community group for the purpose of this thesis is defined as a group focussing on social and/or environmental issues that directly affect the local community. The work is carried out by and for the local community with any benefits from this work going either directly or indirectly to the community. Generally (and certainly with regard to the groups researched in this study), such community groups will act as a focus for the local community over concerns for environmental issues.

These groups are distinct from the larger environment groups such as the Wilderness Society and the Australian Conservation Foundation. Such groups tend to have a wider agenda covering a spectrum of social, political and environmental issues. The community groups in this thesis tend to focus on a single localised issue.

One factor that should be highlighted is that community groups are made up of members of the community and so like the community are not uniform. Community groups will comprise a diverse range of individuals giving each group different priorities and goals. Valerie Brown's research into preparing a communication strategy for the National Landcare Program emphasises this. She notes that pastoralists, city administrators, aboriginals and scientists all speak different languages, yet belong to the same group - Landcare. This diversity of individuals contributed to the apparent communication problems in Landcare groups. (From the Landcare website - http://www.landcare.gov.au/agfor/landcare/pub/languages/1-listening1.html, accessed 19 February 2000). The community group members in this thesis, while different from each

other, are all from the same small coastal region in southern Victoria and are unllikely to display the diversity experienced by Brown during her research. It remains to be seen, though, if the communication problems experienced by Brown occur also within the groups studied in this thesis.

Being at the 'grass roots' level, community groups are the closest link to the public, with the most intimate knowledge of community feeling and understanding about local environmental issues (Smith, 1998). The theory behind this study is that such community groups are ideally placed to play a significant role in the many aspects involved in managing Australia's environment. The level of understanding concerning these matters amongst members of environmental community groups, however, is unknown.

## Research Problem

There is considerable literature on the function of community groups as a whole, but little about the individuals that comprise them. If these groups are to play an active role in marine and coastal management then it is important to have a better understanding of the people involved. For example, why do members of such groups initially get involved – what motivates them to join? Given their more intimate involvement with local marine or coastal issues, is their knowledge in this area better than that of the general public? Is communication between all interested parties efficacious, for example, between governments, industry and the community groups themselves? That is, are community groups receiving the information they want and in a useful mode of delivery? Can they be willing and able participants in the processes espoused by the policy makers who insist

that public participation is essential to the management of our natural resources? The report of the Ministerial Advisory group on Oceans Policy states:

> Options to build community awareness and understanding of marine issues should be pursued. Programmes targeted at specific community sectors should be expanded or initiated where warranted (Ministerial Advisory Group on Oceans Policy, 1988).

Evidence of communication breakdown exists in other community groups. Brown (1996, p.20) found communication problems within the National Landcare Program (NLP). She suggests that during the period of her research the transfer of information between the various parties involved in the operation of the NLP was a "one-way street". For example, information was willingly exchanged between those in the group Brown referred to as "expert advisers", but this information was rarely transferred to the members of the community landcare groups. Brown noted a trend for specialist or expert advisers to rely on other expert advisers, without input from landcare members. Why does such information trasnsfer occur in such an unbalanced way and is this also evident in the Coastcare groups? Is it due to, as Brown suggests, everyone speaking different languages? How much of this miscommunication is due to individuals within the different groups as opposed to any bureaucratic barriers or redtape?

Two commonwealth documents, the Commonwealth of Australia (1998a) and the Ministerial Advisory Group on Oceans Policy (1998) have highlighted education and access to information as the primary modes of increasing awareness and public

participation in the environmental management process. Will individuals within community groups, however, respond positively to this strategy? Will they seek to be involved? Do they actively seek access to the relevant information? How do they balance conflicting information? In what way do they learn most about their group's environmental problems: formally through seminars and workshops, or informally through hands-on work in the field and trial and error. Currently all the issues highlighted in this section are relatively unexplored, but have far reaching implications should the Government push for greater public involvement in the management of our environment. A better understanding of how members of such groups learn could enable development of better ways to target information to the groups.

To gain a better knowledge of environmental community groups and the individuals that comprise them, a set of four core research questions was formulated:

- why do people get involved in such groups;
- how do group members learn;
- how effective are current methods used to increase awareness and understanding of marine and coastal issues; and
- what are the current levels of members' knowledge of the marine and coastal environment?

This thesis focuses largely on the needs and attitudes of community group members. It is acknowledged that information needs to be communicated in more than one direction - that is both a 'top-down' and 'bottom-up' approach - for programs such as Coastcare and

Landcare to succeed. It is beyond the scope of this thesis, however, to assess to effectiveness of information transfer between all involved parties.

Government documents like the Oceans Policy suggest education and increased awareness and understanding of the environmental issues we face is important for the public and particularly community groups who play a greater role in the hands-on management of the environment. Based on this principle, this means that community group members will need to have a grasp of scientific principles related to their work. Rather than concentrate on why or if such a concept is a beneficial goal, this thesis looks more at how individual members of a community group learn the scientific information that is being made available to them. For the purposes of this thesis scientific information is information related to any scientific field such as environmental management, water chemistry or ecology.

## Research Questions

**1. Joining and Involvement**

- What factors motivate people to join environmental community groups?

**2. Selection and Use of Information**

- What information and expertise is selected by members of community groups?
- Do people deliberately seek information and expertise that will enhance or support their individual or group concerns?

- Is there an information gap between what is required and what is available and offered?
- What information do members receive or have access to that helps instruct them in their work and increases their understanding about what they do?
- How do members balance information from conflicting sources?

**3. Formal Versus Informal Learning**

- What is the role of official or formal learning and knowledge versus the informally gained knowledge that is part of an on-going human social process? Relative to this thesis, formal learning is defined as learning that occurs in workshops, seminars or courses where the intention is to learn about an area specific to the community group's work. Informal learning is something learnt on the job or through trial and error. See page 59 for full definition.

**4. Environmental Knowledge**

- Are the members interested in the ecological issues surrounding their work?
- How does an individual's recognition of local environmental issues extrapolate to a broader knowledge of the marine and coastal environment?

## Research Method

A qualitative case study of three environmental community groups was carried out to examine the above questions. The three groups were all involved in marine and coastal

issues around Melbourne's Port Phillip Bay in Victoria. Two of the groups investigated are part of the combined Commonwealth, State and local government Coastcare program which assists local communities to set up groups to protect and conserve areas of Australia's coast. The program provides regional coordinators across the country who assist with training, organisation, identification of projects needed to be undertaken and grant applications for funding. The third group, the Dolphin Research Institute, is concerned with protecting the dolphins residing in Port Phillip Bay. The institute also attempts to inform and educate the public about the existence of dolphins and their importance to the bay's ecology.

## Significance of this Study

If the plans such as those described in the Oceans Policy (Commonwealth of Australia 1998a,b) to involve community groups in the many aspects of environmental management are implemented, then it would seem prudent to find the most effective ways to educate group members. This study provides an indication of where research into such areas could begin. The investigation of three groups limits the breadth of the study, but provides a general profile of some environmental community groups and their members and offers directions for further research. For governments and other bodies, such as non-government organisations (NGOs), involved in trying to raise community awareness and understanding of the environment, this study provides information about how to achieve this aim through increased understanding of how members of such groups learn and use information. In addition, it facilitates better communication between all groups involved

in the making and implementation of environmental policy and management of Australia's environment.

## Summary

Community environmental groups are growing in number and are playing an increasingly important role in communicating to the wider public and government bodies the need to protect and manage our environment in a sustainable manner.

This thesis is a case study of the members of 'grass roots' environmental community groups. It looks at their motivation for joining, the information they receive, whether they learn from this information and their knowledge of the marine and coastal environment.

Understanding these issues will help in assessing better ways to effectively target information to such groups. It could provide an insight into how such groups or their members could be best utilised in the apparent push by governments and other groups like Landcare for public participation in the management and protection of our environment.

Three groups are examined in this study. All are situated around Port Phillip Bay in Melbourne, Victoria. Two are part of a combined government program called Coastcare. The third is concerned with learning about and protecting dolphins in Port Phillip Bay. All groups rely on members acting as volunteers to carry out their work.

## Overview of Thesis

A further four chapters comprise this thesis. Chapter Two, *Literature Review*, looks at the relevant research surrounding the topic of this thesis. Chapter Three, *Methodology*, describes the methods used in collecting and analysing the data. Chapter Four, *Results*, outlines the results found. Conclusions drawn from the research are discussed in Chapter 5, *Discussion*. This last chapter also contains recommendations for more effective ways to raise awareness and understanding of community group members. Limitations to the conclusions drawn are also discussed.

# CHAPTER 2

# LITERATURE REVIEW

## Overview

The ocean and its treasures are largely hidden from us. We see little of the living sea underneath the waves as we similarly see little of the destruction from pollution, fishing practices or other anthropocentric activities. This is despite the Australian population seeking the country's shores for recreation or permanent habitation. We admire the sea's beauty and untamed nature, yet willingly use it as a garbage dump. According to D. Tarte, Executive Officer of the Australian Marine Conservation Society, our view of the ocean is a superficial one. Even though we have a beach culture and many Australians worship the golden stretches of our coastline we have a fear of the sea (D. Tarte, pers. comm., May 1998). Furthermore, K. Brent, an officer with the Victorian National Parks Association, believes this fear or psychological remoteness from the ocean is one possible hindrance to programs such as Coastcare which aim to increase understanding of the ocean's importance and of the damage humans can cause (K. Brent, pers. comm., May 1998).

This chapter therefore examines the individual's role in community groups and how this relates to the concept of public participation. It looks at the different ways adults can learn and how these may influence effective transfer of information to community group members. The chapter also covers research on community group members' knowledge and understanding of environmental concerns and whether these extend to environmental problems or issues that do not directly affect them or their groups.

## Why People Join Community Groups

The first question in this thesis covers factors motivating people to join environmental community groups. There exist a number of potential barriers to these factors and these are emphasised in the documents on Australia's Oceans Policy.

An oceans policy issues paper (Commonwealth of Australia, 1997a) lists a number of constraints on involving the community in management of marine and coastal resources. One of these is the lack of community acceptance that ocean resources are limited and under threat. A second is the lack of community understanding of the extent of 'connectedness' of different marine ecosystems.

Despite these constraints, Carr (1997, p.7) found that where people recognise a problem, those concerned enough form a group to try and do something about it. Carr's research into Landcare groups revealed that a concern about an environmental problem and a sense of community were two of the primary motivations for people initially involving themselves in such a group. She also described the power of the group as a motivating factor, as people see the political, social and economic benefits of bonding together to address a common issue.

Carr (1997, p.14) also identified a number of other factors that facilitated group members' involvement. These include the following:

- knowing, liking and fitting in with the group;
- having time available for a worthwhile cause;
- having supportive government institutions;

- having good leadership and coordination; and
- gaining and maintaining skills and knowledge.

Once a member of an environmental community group, one then has to learn and put into practice skills that will resolve the group's problem. The opinions on the ability of community groups to influence their local environment are as many and varied as are those on how groups can best achieve such management. Carr (1994) believes that while members have individual roles within their group, there is a recognised increase in power to change things because the group is organised. Smith (1998) feels the power of community groups is growing as the numbers of groups also grow, stating that people living within an environment are better placed to make decisions relating to the 'bioregion' than government authorities.

In contrast, Wells and Brandon (1992) believe communities have insufficient influence to resolve resource conflicts better than a centralised authority. Carr (1993) differs again, suggesting that neither community-based environmental groups nor government attempts to regulate or persuade Australians to act towards the common environmental good will work on their own. Carr (1997) argues both 'bottom up' and 'top down' approaches are needed if a sustainable management path is to be successfully followed. She states (p.43) that if 'top-down' and 'bottom-up' approaches to environmental management do not lead to constructive communication, proposed environmental advances in management and conservation will end up as more rhetoric that contribute little to building a more productive future.

Regardless of a community group's current ability to create change, Henry and Olson in Alcock (1993, p.32) maintain the following about such groups:

> They are more cost effective, more responsive, more innovative, have excellent community networks and are more trusted by the Australian community than governments and the private sector.

This suggests that given adequate resources and authority such groups are well placed to participate in policy implementation and management with regard to the environment.

## Achieving Public Participation

The Commonwealth Government believes genuine community participation is assisted greatly by the existence of programs coordinated by non-government bodies such as the Marine and Coastal Community Network (MCCN), Landcare and Coastcare. Its Oceans Policy Issues Paper 7 states:

> Continuation of these programs will facilitate a community group's involvement in planning and management and provide a mechanism for information sharing and cooperation among governments, industry and the public. (Commonwealth of Australia, 1997a, p.34).

To assess public opinion on, amongst other things, the community's role in management of Australia's coast and oceans, the Commonwealth Government released an issues paper

for public comment. The paper (Commonwealth of Australia, 1998b, p.26) suggests that effective public participation in ocean management requires the following:

- public access to sufficient information about current oceans' resource uses, proposals and alternative uses and their impacts;
- sufficient opportunities for the public to make informed community contributions to decisions and management; and
- a clear understanding of the responsibilities of governments for planning and management in meeting community and national interests.

Eden (1996), however, believes that such strategies may only lead to a situation similar to the current one where public participation often involves only discussion of awareness and education. She suggests active consultation of information rather than passive absorption is the difference between having the knowledge and being empowered to act. *Agenda 21*, the document resulting from The United Nations Conference on the Environment and Development, appears to agree with Eden's statements (Robinson, 1993a). The document is a global environment action plan. One part of the document, focussing on global social policy, identifies a lack of awareness of the interrelation between the environment and human activity. This, it suggests, is due to inaccurate or insufficient information and poor access to and targeting of the information. *Agenda 21* also argues that governments are currently more concerned than previously with instilling environmentally-sound values and behaviour into people through awareness and education. Public participation, it says, has been limited to established channels such as non-governmental organisations rather than the general public (Robinson, 1993a, p.148).

As a basis for action, *Agenda 21* (Robinson, 1993b, p.582) states the following:

> Education, including formal education, public awareness and training should be recognised as a process by which human beings and societies can reach their fullest potential. Education is critical for...improving the capacity of people to address environment and development issues...Both formal and non-formal education are indispensable to change people's attitudes so that they have the capacity to assess and address their sustainable developmental concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development and for effective public participation in decision making.

Should the public wish to involve itself in the management of the environment, little is understood as to how it will best learn all the government believes important. Current Australian federal government documents on the oceans policy have stated the need to increase public participation and raise awareness and understanding through better access to information and educational resources (Commonwealth of Australia, 1997a,b and 1998a,b). The Oceans Policy (Commonwealth of Australia, 1998a, p.28) details a plan to develop a comprehensive strategy to assist the public, industry and government in learning about and understanding the role of Australia's Oceans Policy. It also outlines plans to develop training courses and summer school programs which focus on marine management and enhancement of practical skills. The documents, however, give little insight into how this access to information, increased education and opportunities to contribute to policy and management are to be most effectively achieved. A similar fact

was noted by Kelly, Boyd-Law, Rietmuller and Thompson (1998, p.75) in their research into landholders involved in a project assessing methods of monitoring and managing Australia's feral goat population:

> While participative approaches are often acknowledged in policy documents, the methods for integrating farmers' and scientists' expertise in agriculture projects is still developing.

**Public Motivation: Will They Respond to the Call**

According to Carr (1997), the primary factors motivating people to join environmental community groups are a concern for the environment, a sense of community and the power of a group to achieve something. The Australian Government is now encouraging public participation in the management of Australia's environment (Commonwealth of Australia, 1998c). Questions have been raised, however, as to what extent the public and community groups will participate in the various aspects of policy implementation and hands-on management regarding the environment. The United Nations document, *Agenda 21*, states that such participation is currently limited to established channels such as NGOs rather than the general public.

The next section explores how people learn science based on a model known as the 'Constructivist Learning Model'.

## Interpreting Information: A Model of Learning

How members of environmental community groups select and use information and whether this occurs in a formal or informal learning context make up the second and third broad questions of this thesis. There are many sub-questions that come under these two questions, but all are related to one of the main areas of importance in this study: how members of environmental community groups learn and how the information and practical skills suggested in Australia's Oceans Policy can be best targeted to them. This and the following section, 'Information Access: Experience and Experts', are related to these questions. When it comes to teaching and communicating scientific information, a large amount of research in recent years suggests that a constructivist approach would be the most successful.

### Constructivism

Cognitive scientists are revealing that most people have misconceptions about science and nature and that traditional schooling is failing to alter these misconceptions (Yager, 1991). Much of the research into cognitive science has been used to support a relatively new model of learning referred to as the 'Constructivist Learning Model'. In this model, the emphasis is on the learner rather than the teacher (Yager, 1991). Yager sees learning as an active process occurring within and influenced by the learner as much as by the instructor or formal learning environment. Thus, learning outcomes do not depend entirely on what the teacher presents. That is, as Tasker (1992) describes it, learning is the modification of preexisting ideas in a person's head.

Saunders (1992) provides a different way of explaining constructivism by saying that meaning is constructed in the mind of the learner as result of his or her interaction with their world. These meanings may or may not agree with those generally accepted by the scientific community, but they make sense to the individual according to their experience. Saunders also maintains that the construction of this meaning is an active process, arguing that if the learner encounters information that agrees with past experience, the meanings are confirmed and become strongly held.

There is more to constructivist learning than manipulating a person's notions about science. There exist barriers for the teachers of science to overcome as well. As Yager (1991) claims, many people are convinced that the first step to learning science is to learn its special vocabulary – often by rote. Language though, Yager argues, must not simply be a source of information – it has to contain meaning and relevance. He contends the following:

> Rote learning and repeated practice are unlikely to generate real understanding and useful knowledge...Knowledge is actively acquired...It cannot simply be transferred through words without first an agreement about meaning and some experiential base. A human being's experience always includes and is strongly influenced by our social interaction with other humans... While such learning always takes place in a social context, only the individual can know what he or she has constructed. (Yager, 1991, p.55)

It should be noted that, as Yager (1991) states, the constructivist model is still only in the research stage. There are only initial results and the research theory suggesting that this sort of reform will create a paradigm shift in scientific teaching and learning.

As well as the factors enhancing learning, there are also those that act as deterrents. Research by Merriam and Caffarella (1991) found insufficient time, lack of awareness that educational facilities exist and a belief that it is against social norms to participate in such activities were major factors explaining why adults failed to make the effort to discover new information. Thus, there are many factors to be considered from the perspective of both the teacher and learner of science. Some of the theories as to how people learn science in an environmental context are discussed in the next section.

**Learning Science in an Environmental Context**

Eden (1996) makes a distinction between global and local environments. She suggests that where the local environment is an issue, science is not the primary motivator of environmental action nor the main source of environmental knowledge. She argues that first hand experience can also be empowering and contrasts with the second-hand non-experience provided through formal learning of science.

> People therefore, look for justification through non-scientific knowledge at the same time as seeking the second-hand non-experience that science offers them. (Eden, 1996, p.191)

Eden clarifies this by saying that people look to science for unequivocal data but can adopt their own interpretation through the use either of moral judgements or first hand experience (as opposed to second hand non-experience) and that they hold to this interpretation where science would contradict it.

Despite Eden's comments, there are instances where the public has learnt science informally and first-hand. An example of such a scientific experience can be found in volunteers with the international organisation, Earthwatch. Earthwatch was founded in 1972 with the aim to improve human understanding of the planet, the diversity of its inhabitants and the processes that affect the quality of life on the earth. It facilitates the pairing of scientific researchers in search of funding and/or labour with interested citizen volunteers (http://www.earthwatch.org, accessed 22 Jan. 1998).

Earthwatch scientists create research environments accessible for public experiential learning, in a group or team situation, in return for volunteers who fund the research. The demarcation or barrier between knowledge production and representation is lowered, giving the public a greater understanding about the role of science.

The following is feedback from Pat Gallop, a 1991 Earthwatch volunteer team member:

> ...some of us spent time setting out sticky traps on the chollas for spider prey, which were later collected and analysed under microscopes. I found the experience of this project tremendously informative, having never studied marine biology before, and I felt challenged both physically and emotionally. (From the

> Earthwatch website - http//:www.earthwatch.org/r/PRpolis2.html, accessed 22 Jan. 1998)

Other research about how people learn science has been conducted with graziers in Landcare groups. Ross, Abel and Manning (1996) found that graziers relied heavily on learning from observation, which meant they became familiar with the working of their own properties and region without necessarily being able to identify general principles of how environments behave.

In addition, Carr (1993) and Rogers (1983) found that landholders are more likely to accept and use new information if it comes from within their own Landcare group. That is, farmers learnt personally from other farmers within a group learning context which included extension officers, government department representatives and private consultants. Carr (1997, p.22) expressed the following about such groups:

> Many Landcare groups act as props for social learning and, without them, communication of ideas and information throughout the community would be less evident.

The following quote is from a scientist interviewed by Carr (1997, p.29):

> We [scientists] are technologically and scientifically driven [but] reality is different. Some think that all knowledge is scientific [but] scientific determinism is bullshit. A lot of knowledge is gained from experience, not science.

When learning science, the Constructivist Learning Model suggests that the emphasis is placed on the learner rather than the teacher, and that learning is an active process influenced, amongst other things, by the preexisting ideas of the learner. Research with Landcare groups reveals that farmers relied heavily on observation, thus forming their own ideas outside of any formal learning context. Social context was important also. Farmers learnt much from personal contact with other farmers or other people respected or trusted, such as extension officers and private consultants. This thesis assesses the exposure to and influence of scientific rationale on community group members. It examines how members learn individually and as a group. The following section looks at the learning resources available to community groups and which resources are accessed or relied upon most.

## Information Access: Experience and Experts

With a growing amount of information available and being thrust upon people, LaFollete (1995, p.235) has suggested the following:

> Farmers need help filtering the relevant and more important facts from the mountain of information available. They need communication that demystifies the process of research and esoteric data that results from it and places all this in a social context.

Supporting LaFollete's evidence, M. Lauder, a Coastcare coordinator (pers. comm., 1998), believes members of Coastcare groups rely heavily on the few within their group,

or closely affiliated with it, who are considered to have an expertise in the areas regarding their group's work.

When it comes to experts, Wynne (1987) sees these people as the information providers, educationalists and the primary decision influencers (if not decision makers). Wynne states that for nearly two decades, authorities and experts have promoted and used scientific rationality to dominate discussions and enhance the credibility of decisions. Eden (1996, p.183), however, proposes that the domination of experts in many discussions involving the environment may militate against the successful involvement of the public in this area. She states the following:

> [Experts] do not necessarily lead to the successful implementation of environmental policy as their use fails to address the other ways people relate to their environment, ways which can influence the uptake of environmental policy in daily life. Consequently, policy tends to assume that providing information and education will secure behaviour change when behaviour is in fact intimately dependent upon public interpretations of the issues.

Petts (1997) reveals the underlying frustration of many scientists or 'experts' trying to promote the rationale behind their science. Petts states this frustration stems from a public that is uninterested in their view and that the public often appear to have their own agenda and will not listen to "objective science" (Re: "objective science", Petts seems to imply that non-scientists fail to understand that experimental design aims to eliminate subjectivity). This frustration extends to the belief that involving activists and special

interest groups will be detrimental to the education process, and that the scientific complexities underlying current techno-scientific debates make them difficult to discuss. Petts also expressed, however, the importance of being sensitive to the local context in which information and expertise is used and interpreted. In her research, a list of 500 community organisations that might have had an interest in waste management were selected. Those selected represented a range of community interests: education, countryside conservation, environment, business, parish, health and ethnic group interests. A telephone survey of 46 of these people identified two types of people: The first were the environmentally alert – the minority. The second were the non-expert or environmentally unaware – considered the majority.

It is reasonable to expect, however, that many of those surveyed actually sit somewhere within the two extremes of these arbitrary groups. That is, they are not strictly one or the other, but belong somewhere along the continuum of the two extremes.

The respondents to Petts' survey stressed the need to help the general public understand the extent and nature of the waste problem before starting discussion about options and potential solutions. The survey also revealed that people wanted information from credible third parties. In the future, Petts sees expertise as no longer being the prerogative of the scientist or technical expert. She believes that there is a rapidly growing number of community members interested in finding information from an increasingly accessible array of worldwide sources.

As pointed out by Lauder (pers. comm., 1998), community group members tend to rely on one or two skilled people in their group for information. It is therefore important to determine how these members balance scientific information which may conflict with what they themselves perceive as correct, or may involve situations where there are two or more differing expert opinions on an issue.

Petts' (1997) research into community members involved in the local waste management debate found many conflicting expert opinions existed. When these community members wanted to put forward their views, Petts discovered their views were frequently drawn from direct personal experience. This included contribution to, or involvement in, local recycling campaigns, observations from other countries or evidence from friends and family members who lived elsewhere. Their views were also influenced by information they had seen or heard in the media. Most of this evidence, says Petts, was used to test experts as a means of questioning assumptions or information which seemed to be in conflict with views they had gained from elsewhere.

Eden (1996, p.192) believes there needs to be more research into how a person balances two understandings. She argues the following with regard to what she sees as a need to assess the relation of environmental knowledge to the levels of individual perception:

> People's experiences often relate closely to local environments, and in this way contrast with the scientific dominance of the debate about the global environment.

In concordance with Eden, Irwin (1995, p.118) says a person's observations of and responses to the effects of the local environment contextualises their understanding of environmental problems. This can lead to a contradiction of scientific principles which may be dominating a debate.

With science at least, learning is often influenced by a person's preexisting ideas. Carr (1997, p.22) suggests that members of Landcare groups rely on observation and advice from trusted experts or other farmers within the social context of their Landcare group. These experts though, have to be known and trusted for their advice to be heeded. Much scientific evidence, however, often appears to conflict with a person's notions or experiences. Hence, when balancing conflicting scientific information, it seems a person will often fall back on their own personal experiences for a solution.

The final section of this chapter discusses the theories underlying the NIMBY (Not In My Back Yard) syndrome. This relates to research question four concerning members' levels of local knowledge relative to the marine and coastal environment. Part of question four also assesses how well this knowledge extrapolates to a broader understanding of marine and coastal issues faced by Australia.

## Not In My Back Yard

Anecdotal evidence suggests that even among members of marine and coastal environmental community groups there exists a lack of awareness and understanding of the marine environment and the problems it faces (M. Lauder, pers. comm., 1998).

Analysis of a questionnaire released with Australia's Oceans Policy Issues Paper in the middle of 1998 revealed as 'less than adequate' recipients' knowledge of the state of Australia's oceans overall and their existing knowledge of Australia's marine biological diversity. The average scores for the questions in this section were the lowest for all the questions covered in the survey. On a score of one to five, with one being considered 'very inadequate', this area averaged 2.2 overall (Commonwealth of Australia, 1998c, unpublished).

Of the 201 questionnaires received, 150 came from groups with varying concerns for the environment. These included government departments like the Australian Antarctic Division and the different state environment departments, environmental groups (including local, state, national and international groups), industry, business and professional groups like the Tourism Council of Australia and the Australian Coral Reef Society, and academic institutions (Commonwealth of Australia, 1998c). Many of these groups are involved in ocean conservation or marine biology and yet the overall results suggest an inadequate understanding of Australia's oceans and their importance. These findings bode poorly for the general public knowledge.

Should a poor public knowledge of Australia's marine environment exist, it would support some of the findings implied in numerous unpublished surveys that found that the public receives most of its environmental knowledge from the mass media. (e.g., Survey Research and Consultancy, 1988 - unpublished and Swan Bay Integrated Catchment Management Committee, 1998 - unpublished.) One published survey (Alcock, 1993) reveals similar findings.

While the evidence is anecdotal, the public's knowledge of Australia's marine and coastal environment does appear low (D.Tarte, pers. comm., May 1998, M.Lauder, pers. comm., 1988 and Ministerial Advisory Group on Oceans Policy, 1998 p.27)).

## Summary

This study examines four broad research questions related to members of environmental community groups. They are as follows:

1. factors affecting joining of and involvement with such groups;
2. selection and use of information;
3. formal versus informal learning; and
4. members' knowledge of the marine and coastal environment.

**Q 1**. Where people recognise an environmental problem, those concerned enough form a group to do something about it. The Commonwealth Government's recognition of the value of such groups has led it to encouraging coordinating bodies, such as MCCN and Landcare that facilitate community group involvement in planning and management of the environment. There are differing opinions, however, on the ability of such groups to manage the environment. As a solution, the Government has stated in its policies that effective participation could be achieved through better education and access to information. How this is best achieved is related to how people learn.

**Q 2/3**. Much of the research into the 'Constructivist Learning Model' suggests that teaching and learning scientific information would be most successful when based on this model. The model implies that interactions with other people and our past experiences strongly influence our construction of ideas and therefore our ability to learn (Yager, 1991 and Saunders, 1992).

With regard to experience, first-hand experience may be a dominant factor influencing a person's environmental actions. Research conducted with graziers and Landcare groups found that learning from observation was important. Farmers also learnt more within a social context, such as through personal contact with their group or other farmers. Expert advice was often only heeded when it came from other respected group members or those known and trusted by the farmer.

**Q 4**. The research relevant to the final question is limited and largely preliminary or anecdotal. The results though, imply that the general public's knowledge of the marine and coastal environment is low. The research also suggests that members of the public become concerned about the environment only when the issue directly affects them.

The next section, Chapter 3, *Methodology*, discusses the research methods used to collect and analyse the data and the reasons these methods were chosen.

# CHAPTER 3

# METHODOLOGY

## Overview

The study focussed on three environmental community groups involved with marine and coastal issues. The four research questions were investigated through qualitative research methods incorporating interviews, participant-observation, a group discussion and review of documentation. The four questions concerned the following:

1. the motivations for joining an environmental community group;
2. members' selection and use of information;
3. formal versus informal learning; and
4. individuals' knowledge of the marine environment.

Questions 2 and 3 are designed to discover how members of such groups learn.

The community groups in this thesis were chosen because of their involvement in marine and coastal environmental issues and their substantial base of volunteer members. Details of each group are given in the following section. The remainder of the chapter describes each method of analysis used in this study and the role it played in answering the research questions.

## The Community Groups

All three groups are similar in that each is involved in trying to understand and rectify a local environmental problem and each relies on volunteers to carry all or most aspects of its work. The focus of this study was primarily on the active volunteers of each group and ultimately on how such groups could play a more effective role in marine and coastal management. Others outside the three groups were also interviewed. These outside people were members of the NGOs, Coastcare and the Marine and Coastal Community Network (MCCN). These organisations help community groups become established and then coordinate their activities. Descriptions of these NGOs and the community groups are given below.

### Balcombe Estuary Rehabilitation Group (BERG)

BERG began only two years ago, initially to rehabilitate a small stretch of remnant bushland running along the Balcombe Estuary in Mount Martha on the Mornington Peninsula. The area of concern was infested with weeds and severely eroded in places, due to tracks made indiscriminately by people seeking ways through the bush, often to reach the estuary's banks for fishing. The estuary itself is the endpoint for many stormwater drains and runoff from surrounding land. BERG is now also involved in monitoring the health of the estuary as part of Streamwatch, another state government initiative whereby communities or groups are instructed in how to monitor the health of local water courses. BERG members meet every Tuesday to work on rehabilitation of the estuary and the strip of remnant bushland. Once a month they hold a major working bee that usually attracts a large group of core members to do any necessary major works.

There are now over 100 members of BERG.

**Tyrone Coast Action (TCA)**

This newly-formed group has taken on the task of reestablishing the natural vegetation in the weed-infested and degraded areas along the Tyrone foreshore near Rye on the Mornington Peninsula.

A small core of active members meet every Thursday afternoon for two hours to carry out activities such as weeding and replacement with indigenous plant species.

**Dolphin Research Institute (DRI)**

DRI was formed in 1989 by a group interested in learning more about the dolphins in Port Phillip Bay with the aim to protect them. DRI is now a CSIRO-accredited research institute. Its research is focussed primarily on management issues concerning the impacts of commercial tourism on dolphins. (Tour boats taking tourists, either to see or swim with the dolphins, are increasing in popularity around Port Phillip Bay. Dolphins have been and continue to be subjected to harassment from tour boat operators and private boat owners.) Other projects include public education and provision of summer university scholarships, whereby recipients become involved in intensive research projects carried out by the institute. The institute has attracted sponsorship for its research and other activities from corporations such as McDonalds. The group and its achievements have therefore become well recognised.

DRI remains a non-profit organisation, however, relying heavily on the volunteer labours of its associate members. Associate members are volunteers who pay an annual membership fee that allows them to participate in DRI's research, attend meetings and contribute to any policy decisions.

**Coastcare**

Described by Commonwealth of Australia (1998b), Coastcare is a cooperative federal, state and local government program providing opportunities and resources for communities to become actively involved in coastal management and decision making. Community members form Coast Action groups, which operate under the coordination of the Coastcare program. The Coastcare program employs facilitators that provide technical, scientific and organisational advice. One facilitator was interviewed as an expert, due to his knowledge of the specific groups involved in this study.

**Marine and Coastal Community Network (MCCN)**

The MCCN is an NGO that plays an influential role in supporting all forms of community activity associated with marine and coastal issues. Administered through the Australian Marine Conservation Society and funded by the Federal Government's Marine Program, the network's roles include raising community awareness of the need for improved management of human activities in marine and coastal zones, facilitating the communication of such information to communities and organisations and keeping marine issues on the public's and governments' agenda.

A MCCN coordinator involved intimately with many community groups and individual members was interviewed as part of the research for this thesis. His position provided a different perspective on environmental community groups overall.

The MCCN puts out two newsheets, *Ripples* and *Waves* which were received by all three community groups in this study. Each newsheet contains articles on marine ecology, conservation and policy issues.

The next section describes the research methods used and the role each played in providing the results of the study.

## Research Methods – A Qualitative Approach

Multiple methods of data collection facilitated triangulation and built a profile of members and the groups as a whole. Data were gathered over a six week period and were analysed qualitatively. Participant-observation was carried out with all three groups. In-depth interviews were held with members of BERG, DRI and the coordinators of MCCN and Coastcare. A group discussion was held with the Tyrone Coast Action group. All available documentation relevant to each group was read.

By combining different qualitative methods, as described by Reason and Rowan (1981, p.206) and Mathison (1988), both the actions and words of members could be brought

together to build a more complete and in-depth picture. Such understanding would be unattainable through questionnaire-based quantitative methods.

Petts (1997) provides more detailed reasons for selecting a qualitative-based study. She refers to qualitative research as essential for understanding the dynamics of social processes. Such research, she says, deals more effectively with the context-specificity of public perception and information requirements.

Other reasons for choosing qualitative research methods pertinent to this study are given by Marshall and Rossman (1995). They state that qualitative research should focus on what the people are doing. For example, what they talk to one another about, what they do in the field or what they write. Silverman (1993) believes understanding of this form comes largely from observing the routine rather than what appears to be exciting. For these reasons, much of the data for this thesis are based on observations made from working with groups during their working bees or research trips. Discussions on these trips revealed what people think and understand about issues facing the marine and coastal environment and how their involvement in an environmental community group may affect their current perception of these issues. As described by Silverman (1993) and Marshall and Rossman (1995), participant-observation and interview were chosen to provide a greater insight into each member's ideas and understanding. Observed actions or behaviours would reinforce any salient features coming from the interviews.

Following is a discussion on the different research methods used in this study and the basis on which they were chosen.

**Participant-Observation**

A considerable emphasis was placed on the participant-observer role for this study. Its importance lay in the different perspective that could be gained by working with the members and being involved in their conversations on a personal level rather than through a structured research environment. For the six week period of research, I therefore became a paid-up and active member of BERG, participating in many of their activities such as weeding, erosion control and tree planting. Before this research began, I was an associate member of DRI and participated in their research activities and attended their monthly associate meetings. I visited the Tyrone Coast Action group for one day and assisted with weeding while talking to the members. As with BERG, the participant-observation role was necessary to gain a better insight into TCA members' knowledge, ideals and behaviour relative to the marine and coastal environment. In each case, the group was informed about the research being done and the reasons I was participating in their activities.

While Silverman (1993) separates participation from observation, I found it necessary and useful to combine the two. As pointed out by Judd, Smith and Kidder (1991, p.304):

> The more the participant-observer is immersed in the research setting, the less likely the research subjects are to distort the research...The people studied by

participant-observation are constrained to act as they normally would, particularly if the research continues over many weeks.

Following this scenario, I was able constantly to observe members' behaviour, noting the conversations held between members and their attitude towards the work they performed. I could do this without the members feeling inhibited in their behaviour or speech. In essence, a holistic approach was taken with regard to observation. Participating in the group's work enabled myself and the members I worked with to get to know each other on a more personal level. Members opened up to me because of this and revealed information they may otherwise not have had I remained an aloof researcher observing from the sidelines. By getting in there and getting my hands dirty, I became another member like them.

Bryman (1988, p.61) sees observation as fundamental to understanding another culture or social group and lists two points on the principal characteristics of much observational research. These are:

- seeing through the eyes of the community group members. That is, viewing events, actions, norms, values, etc., from the perspective of the people being studied; and
- observing the mundane detail to help in understanding what is going on in a particular context and to provide clues and pointers to other layers of reality.

By becoming a participant-observer, I addressed these two points.

There are weaknesses in the participant-observer approach and these were taken into account. The main weaknesses pertinent to this study are, first, that the level of involvement necessary with participant-observation can lead to loss of objectivity. As revealed by Yin (1994, p.89) in the following:

> The participant-observer is likely to follow a commonly known phenomenon and become a supporter of the group or organisation being studied.

A second weakness identified by Yin is that the participant role may require too much attention relative to the observer role. Thus, the participant-observer may be unable to give sufficient attention to taking notes and asking questions about events from a different perspective as a good observer might.

**In-Depth Interviewing**

The interviews provided the core data for the study. Observations, field notes and document reviews provided support for the data from the interviews. The interviewees were placed into two groups. One consisted of active community group members who regularly turned up to group meetings, working bees, or public events, but lacked any specific skills or training relevant to the group's work. This group is referred to throughout the thesis as 'non-experts'. The second group, referred to as 'experts', included members and others who possessed skills necessary for a successful outcome of the group's work. These skills might include training in environmental management, plant taxonomy or marine biology. The 'others' in this second group were the community group coordinators from MCCN and Coastcare. These people had reasonable knowledge

of the ecology associated with the groups' work, but more importantly had worked with the groups personally and were known by many of the members. They understood how the group operated, its life history and the problems it had encountered.

The arbitrary distinction between expert and non-expert created a grey area amongst the non-expert members of the community groups. Two of the non-expert community group members at least, have relevant skills that give them some 'expert' credentials. They were considered non-experts in this instance because they were not in an advisory role or sought after for advice in the same way the experts were.

Hammersly and Atkinson (1983, p.26) describe interviews as, "social events in which both the interviewer (and for that matter, the interviewee) is a participant-observer". In effect, the interviews were an extension of the hands-on work I did during working bees and research trips. On this basis also, a strict interviewer-interviewee relationship was avoided. Each interview became a conversation where discussions evolved from the questions on topics of interest to both myself and the interviewee. This approach was important to remove any feeling of demarcation between interviewer and interviewee. The conversational nature relaxed the interviewees and made them more confident in talking to me. The fact that I was participating in the work done by each group meant they already knew me on a more personal level. This also helped the flow of the interview and eased any feeling of 'being interviewed'.

Halfpenny (1979) and Bryman (1988) outline two main approaches to interviews – 'positivism' and 'interactionism'. The standardised protocol of positivism ensures unbiased measurement of facts and beliefs of the interviewee. In contrast, the open-ended interview technique of interactionism provides a social context to the interview which, says Silverman (1993, p.94), is intrinsic to understanding any data obtained. For Reason and Rowan (1981, p.205), both the type of knowledge gained and the validity of the interactionist analysis are based on a 'deep' understanding.

According to Silverman (1993, p.90), a positivist interview generates data independent of both the research setting and the interviewer; a standardised interview being one way of achieving this. Unstructured interviews, say Sellitz, Jahoda, Deutsch and Cook (1964, p.264), can result in a lack of comparability between interviews and their analysis can be difficult and time consuming. Sellitz et al, however, concede that an unstructured interview offers more flexibility and can allow a more intensive study of perceptions and feelings.

Despite a standard set of questions asked, the conversational nature of the interviews required for this study dictated an unstructured approach to the interview, with the flow and direction largely determined by the interviewee. An interview style somewhere between positivism and interactionism therefore evolved, though with greater emphasis on the latter. It was decided an interview based more on a social discourse offered more flexibility to explore areas, outside the set questions, that members thought more interesting or important.

Interviews themselves, with both experts and non-experts, took between 50 and 90 minutes (the difference in times was due to the varied conversational tangents taken in each interview).

Availability of the interviewees and time constraints meant that on three occasions two people were interviewed together, but with individual answers recorded separately. In each case the interviewees knew each other well. Nothing in the interview indicated a reluctance to openly discuss any issue raised due to the presence of the other interviewee. In one case, however, one of the interviewees tended to dominate the discussion and it was necessary on occasion specifically to ask the non-dominant interviewee for his views. Doubling up of interviewees occurred with Emma and Liz, John and Tom, and David and Paula (pseudonyms used) – see Chapter Four, *Results*. For the interview protocol see *Appendix 1*.

One weakness in the approach taken for this research is described by Denzin (1970, p.133). Denzin illustrated that differing interview contexts can influence interviewee response. The interviews for this study occurred in a variety of places such as offices, private homes and in the field. The different setting of each interview often meant that even the standard questions were sometimes asked in different ways.

**Focus Groups**

Focus groups usually work because they tap into human tendencies (Krueger, 1994, p. 10). Krueger claims attitudes, and perceptions relating to concepts, products, services or programmes are brought out in part through interaction with other people.

I conducted a focus group session with members of the TCA during their weekly working bee. Five participants took part, all were retirees. Initially, each were questioned individually or as a pair while work was being done. During the teabreak many of the questions were thrown to the group as a whole. The TCA focus group allowed a conversation to develop between members rather than between each member and myself. This atmosphere provided a different context for the questions asked in this study. The discussion also helped underpin the data obtained from BERG and DRI. As Krueger (1994, p. 11) suggests, people may need to listen to the opinions of others before they form their own viewpoints. He cites evidence from focus groups that indicates people do influence each other with their comments, and in the course of a discussion the opinions of an individual might shift.

Focus groups usually consist of four to twelve people. The interviewer tries to create a permissive environment that nurtures different perceptions and points of view without pressuring participants to vote, plan, or reach consensus (Krueger, 1994, p.6). The discussion with the TCA was held throughout the working bee and during the teabreak. This was probably not an environment that nurtured different perceptions and points of

view and, under Krueger's definition, could not strictly be considered a focus group. I gathered sufficient data, however, to justify the experience.

**Review of Documents**

Where available, relevant literature connected to each group was read. This included newsletters, manuals or booklets used in plant or weed identification, books written by members, websites and any newspaper or other media references to the group.

This was considered necessary as Marshall and Rossman (1995) reveal, reading documents relevant to a group's work or mission is an unobtrusive method rich in portraying the values and beliefs of participants in the setting.

## Why Triangulation?

Triangulation, as emphasised by Patton (1980), enables the researcher to understand the significance of the differences discovered. As Mathison (1988) points out, however, triangulation is not necessarily a technological solution to data collection and analysis, as the different sources do not always correlate nicely. Despite this possibility, the different methods of interview, participant-observation and examination of relevant documents provided for triangulation in this study, as use of any method alone would not have revealed sufficiently in-depth information to the answers sought.

Even with different methods of analysis, limitations exist in this type of research. As with the collection of data, subjectivity can also enter its analysis. As Silverman (1993) notes, the interviewer and interviewee will actively construct their own versions of the world relative to the answer or question presented to them.

## Summary

This study largely focussed on the active volunteer members of three community groups involved in marine and coastal issues. In-depth interviewing, participant-observation, a focus group and review of documentation were the research methods used to find answers to the study's four broad questions.

- **Participant-observation**: This method was used with all three groups and entailed helping on working bees and research trips. Data were obtained from conversations and observations in surroundings unconstrained by any structured research environment.
- **Interview**: Interviews were conducted with members of BERG, DRI and the coordinators of MCCN and Coastcare, and provided the core data for the study.
- **Focus group**: This was held with five members of the TCA. The group discussion that evolved allowed conversations between members rather than between the members and myself. This provided a different context to the study's research questions.

- **Review of documents**: Reading documents relevant to each group portrayed the values and beliefs of the study participants. The documents analysed from the three groups included newsletters, manuals, websites and media references.

The results from the different methods used are presented in the following chapter.

# CHAPTER 4

# RESULTS

## Overview

The aims of this study were to examine how members of community groups learn and hence, how governments and coordinating bodies, such as NGOs, can better target information to these groups. The questions in this study are based around three key areas of interest: the factors motivating people to join environmental community groups, how members learn and members' knowledge of the marine and coastal environment.

The questions posed in this thesis are assessed separately under the categories outlined in the research questions. They appear in this chapter under the following headings:

1. Joining and Involvement
2. Selection and Use of Information
3. Formal Versus Informal Learning
4. Environmental Knowledge

The methods of interview, participant-observation and evaluation of documents were used in combination to examine the study questions. Each method reinforced the data gained by the other two. For this reason, all the interviews and observations from both the experts and non-expert members were considered together to tease out the key issues which are addressed in this chapter.

It was immediately obvious after interviewing the various community group members that there were two distinct age groups: a group aged in their early to mid-twenties, and

an older group comprised mainly of retirees. Generally, the younger group were more likely to have a university education. The Coast Action groups had only a small number of young members of whom Lisa was the only one interviewed. All other members were retirees. In contrast, DRI's members, at least those active as volunteers, consisted almost entirely of young members and all interviewees were from this group.

All interviewees are given pseudonyms.

## Joining and Involvement

**Question: What factors motivate people to join environmental community groups?**

Across the three community groups studied, four predominant emotional factors appeared to motivate people to join and become active members of their group. For most, a combination of two or more reasons played a role, but often one primary reason for each interviewee acted as the initial trigger. The other reasons either supported the primary factor or acted later to reinforce the interviewee's commitment to the group. The four emotional factors were as follows:

1. <u>Environmental concern</u>:

This played a role in most members' initial involvement. For some it was the only reason they became involved.

Penny (BERG, non-expert) is retired and a keen bushwalker. She once owned land containing native wildflowers considered rare on the Mornington Peninsula, though she was initially unaware of their rarity. A friend later informed her of the value of the flora she possessed and, as she recalls:

> *"That was the initial spark that started my appreciation of the bush and bush regeneration. Initially then, my reasons for getting involved in BERG were personal due to my love of native vegetation. I have now become aware of the importance of preserving biodiversity and the need to reverse the degradation of our environment."*

Liz (DRI, non-expert) has a Bachelor of Arts (Social Studies) and works up to four days a week as a volunteer for DRI. She saw the protection of dolphins as vitally important for the ecology of the bay. For her, dolphins also play a role in human psychology and social values, symbolising peace and freedom:

> *"I see dolphins as the keystone species and an environmental indicator and so their protection is important."*

Peter is the founder and current President of BERG and was interviewed as an expert. An ex-naval officer, now retired, Peter became the unwilling instigator of a series of protests against the dredging that is occurring in Westernport Bay, south of Melbourne. Peter took on this responsibility, as he explained, because nobody else seemed willing or was unprepared to "stick their neck out" until someone else did. He is still actively liaising with members of parliament and industry about an effective, more sustainable system of

maintaining shipping lanes in Westernport Bay. Peter has a vivid recollection of the trigger that, two years ago, led to him forming BERG:

> *"The trigger for me was the threat of the local tennis club wanting to establish 20 extra tennis courts that would have destroyed part of the reserve and I could see this leading to the eating away of the reserve, little by little."*

2. Altruism:

This reason was prominent amongst the older age bracket. Emma (DRI, non-expert), however, who also volunteers her labour for up to four days a week at DRI, proved the younger exception. She gave the following explanation for her involvement:

> *"Since a young age I have been entranced by dolphins. I visited Seaworld and eventually did a training course there [on dolphins]. Work at DRI is giving me a chance to give something back to the community and the dolphins."*

Emma, at the time of the interview, was training to become a volunteer on 'Looking Good', DRI's boat used to take the public on dolphin-spotting tours. She also holds a Bachelor of Science.

Generally, all the responses concerning altruism were similar to these. Fred (BERG, non-expert), a retiree, is still an active member of a field naturalist club and is often found leading bush walks around the Mornington Peninsula for the local PROBUS club (a social club similar to Rotary). Even before the formation of BERG, Fred had been aware

of problems with the estuary. His reply was typical of those amongst the older age bracket:

> *"It was a need to do something for the community."*

Alan (expert), the Coastcare coordinator, summed up these responses with:

> *"Many are concerned about the environment, but others just come along to do their bit."*

3. Social fulfilment:

During the interviews, this reason was stated only among members in the older age bracket. Many in the TCA for example, stated that part of the reason they got involved was for the social interaction. From participant-observation, however, it was clear that, for all members, social aspects play a large part of being a member and maintaining member commitment to a group. Organising and partaking in group social events were experiences enjoyed by members, as was evident when such events were being planned during working bees and other activities. Indeed, even the work aspect itself often appeared to be an opportunity to socialise.

4. Career development:

This applied to the younger members, with all stating that the volunteer work with their group was a pivotal reason for joining the group.

For Lisa (BERG, non-expert) it was the initial motivation. Lisa had worked casually as a bush regenerator for the National Trust. She has a Bachelor of Science (Botany and Zoology) and a postgraduate degree in Environmental Management. She gave the following response:

> *"I initially joined as I saw it as a good chance to network and further my career [in environmental management]."*

John and Tom (DRI, non-experts) also felt this was an important factor. John was employed as a horticulturist and Tom as a nursery worker. Relative to Lisa though, for these two career development initially had a background role. Its significance became more important later, in their remaining with the group. Both were members of the Pacific Whale Foundation (PWF). Apart from an interest in DRI's purpose, both hoped their involvement would be a launching pad for a long-term career in dolphin research and education.

A minor reason that appeared amongst members, often subtly, was a love of nature. As John, a DRI non-expert, put it:

> *"I love dolphins and whales the same way some people love dogs."*

**Summary**

Members joined their groups because of one or more of the following four emotional factors:

- environmental concern;

- altruism;
- social fulfilment; and
- career development.

Each factor was significant in its own right, though some played a lesser role as the initial trigger. Some often became important later in a member's involvement.

## Search and Selection of Information

The following series of sub-questions were examined under this core question:

- **What information and expertise is selected by members of community groups?**
- **Do people deliberately seek information and expertise that will enhance or support their individual or group concerns?**
- **Is there an information gap between what is required and what is available and offered?**
- **What information do members receive or have access to that helps instruct them in their work and increases their understanding about what they do?**
- **How do members balance information from conflicting sources?**

The results from these questions were combined into four sections and are presented below. The first of these, 'The Seeking of Information', relates to how and where group members prefer to seek any information or advice. The next three sub-questions,

'Outside Help', 'The Information Gap' and 'Balancing Conflicting Information and Ideas', relate to how members use and learn from this information.

**The Seeking of Information**

In all groups, if information or advice was needed it was usually sought from other people. Non-expert members appeared to rely on one or two people for information or help. Such people were either fellow members or people closely associated with their group who had expertise in specific areas. The information sought was generally non-technical and strictly relevant to the activities carried out in the working bees or related work. For example, members might ask the identity of a particular plant or whether something is a weed.

DRI was, in some respects, the exception. As opposed to the Coast Action groups, DRI had as members, numerous people with varying degrees of expertise in both dolphin biology and ocean ecology. While these people were not always present together, at any one time, one or more of them would be readily available either in the office or on site during research activities. Their advice or assistance was regularly called upon and often included information where the recipient required some degree of scientific literacy. During my time as an associate member, such questions involved areas of dolphin biology or the ecosystems in which dolphins live.

Despite DRI non-experts having a greater understanding of their group's work than their counterparts in the other two groups, they still relied largely on people for information. As John (DRI, non-expert) illustrated:

> *"I seek help from Paula [volunteer coordinator] mostly, but I'm always willing to ask anyone who may know anything."*

John relied on people like Paula even though he himself had considerable experience and knowledge of whales and dolphins. John had carried out research for DRI in Tin Can Bay, Queensland, on a dolphin feeding program. He received regular newsletters and other practical literature from PWF and had also spent time at Seaworld, Queensland, doing a training course on dolphin behaviour and biology. John was not the exception; many of the DRI members similarly relied on people as a source of information.

It seemed rare for any non-expert member actively to seek information from literature, though DRI members and non-experts in the younger age bracket were more likely to do so. The only item that appeared to be sought and read by BERG and some of the TCA members were two free local council booklets on weed identification and native plants of the Mornington Peninsula. In reference to these, Fred (BERG, non-expert) stated:

> *"I relied on these a lot for the initial introduction to the area and the work carried out by BERG."*

Other BERG members, including those talked to during the working bees, also claimed to have initially relied on these booklets to identify the local flora.

Referring to seeking information in general, Fred also said:

> *"I need to find information to a point. I consult for basic information only [relevant to BERG's mission].*

Fred, however, was a subscriber to the popular science magazines *Ecos* and *Bird Observer Monthly*, although he admitted reading them only selectively. It could be assumed from this that he had at least a basic knowledge of ecological issues beyond those strictly relevant to BERG.

Joan, a BERG non-expert, a retiree and a regular walker through the Balcombe Estuary, made a statement similar to Fred's regarding how she received her information:

> *"I rarely seek information outside of what is a weed... Most of what I learn in general comes from newspapers and television."*

Penny, the bushwalker from BERG, produced a salient point that emphasised non-expert members' rare attempts to actively seek information relevant to their group:

> *"It is not systematic how we get information – we just get it."*

As mentioned, the younger members were more likely to actively seek information. Emma, a DRI non-expert, acknowledged herself as a "shit stirrer" and actively hunted for any information on dolphin research. Her sources were wide-ranging and included the

WorldWideWeb, CD-Roms and any books or journals that might be relevant to DRI's mission or dolphin conservation in general.

Lisa (BERG) was similar in her desire for information and was the exception amongst the non-expert members of the Coast Action groups. She was also the only younger group interviewee from BERG. Lisa sought management plans and council and government reports on the local area relevant to BERG's mission. Much of this information related to her employment as a Bush Regenerator with the National Trust, however; she appeared keen to learn as much as she could about the management, politics and environmental issues of rehabilitating the Balcombe Estuary. (It might be that her career aspirations significantly influenced her activities in this regard.)

Even Peter, an expert, admitted that he, like most BERG members, relied on a small number of people for advice – most often just the one:

*"We rely a lot on people like Maddy for advice and help."*

(Maddy is a BERG member and works as a horticulturist and landscaping consultant.)

David and Paula (DRI, experts and interviewed together) are two of the people relied on for assistance at DRI. David is the Director of DRI with qualifications and expertise in environmental management. Paula is the Volunteer Coordinator for DRI. She coordinates all associate member activities including research activities and their work on 'Looking Good'. Both also believe their associate members tend not to actively seek information, stating the following:

*"We believe we have the best research library [for dolphins] in the state... Associates don't tend to want to read the science stuff... It is so difficult to provide information that is layman standard and even then there is no guarantee they will read the stuff. People don't have the time...They mostly absorb it [information] passively."*

Information was nearly always sought from people – normally one or two trusted experts within or closely associated with the group. It appeared rare for non-expert members actively to seek information from literature, though younger members were more inclined to do so.

As stated at the start of this section, there are other avenues of assistance besides those within the group. These avenues and how they are used are revealed next.

**Outside Help**

This alternative learning came in the form of workshops and experts from outside the group who gave practical tuition and advice on issues such as revegetation techniques. BERG often invited outside experts to assist with specific problems. One example occurred when a Coastcare coordinator spent a day on site assisting the group with identification and management of pest plants. A second example happened at a working bee. A local environment management consultant came along to demonstrate how to manage and prevent erosion along the estuary's banks. This became an opportunity for all involved to ask questions and view much of what they had been doing from a different

perspective. A lively discussion evolved covering many different aspects of environmental management and estuary ecology. It became an active learning experience for all. This form of assistance was a significant source of learning for Coast Action groups.

DRI also had outside experts visit, but they would usually be invited as speakers to DRI's monthly associate meetings. The experts would talk on local or topical issues relevant to their area of expertise. These meetings were also a chance for the board of directors and associates to meet, converse and learn from each other. The board actively sought input from the associate members.

In addition, DRI held research trips during which associates could involve themselves in the dolphin research being conducted. This included dolphin spotting and identification, and monitoring and recording dolphin behaviour. Following a training period, associates also had the opportunity to work as volunteers on the commercial dolphin watching tour vessel, 'Looking Good'.

Workshops and hands-on instruction from contracted consultants appeared the most accessed and effective information sources for expert and non-expert members alike. All these sources involved people, social contact and often a lively discussion amongst those attending. Another source of information available to community groups came in the form of newsletters/newsheets, booklets and other written educational material. Such sources were rarely used as evidenced in the next sub-question.

**The Information Gap**

Following the interviews, it was evident that much of the information in the form of literature received by the groups was received by only one or two members, such as the president, secretary or experts within the group. This literature failed to be disseminated amongst other members.

Community group members, like any other citizens, had access to libraries and other information sources such as the WorldWideWeb. Specific to their groups though, they also had access to newsletters and fact sheets from organisations like Coastcare and MCCN. DRI had its own extensive research library on dolphins. Other material included booklets and information packages from local councils and workshops. Much of the written material, however, while being delivered to the group, was not readily accessible to the group as a whole. All three groups received the newsletters from Coastcare and MCCN. Only half of those interviewed knew of their existence and Tom (DRI) was the only non-expert member to have read any of them. Tom, like John (DRI, non-expert), was a member of PWF and received all its literature. Tom also personally subscribed to MCCN's newsheets, *Waves* and *Ripples*.

John (DRI) summed up the apparent attitude for many members of DRI:

> *"Not a lot of literature is available for the public [from DRI library] though, it's accessible to associate members. We don't use it much though."*

As previously stated, however, much of the information in DRI's library was written in scientific journals or written from a research perspective and not palatable to the average non-scientist.

In BERG's situation, Lisa, though a non-expert, felt the group could help fill their knowledge void by creating an information base of their own in the form of management plans, site descriptions and reports. She thought that much of the information received by BERG was readily available to other members, but just not sought.

There was no shortage of information available to the members. A considerable amount of relevant literature was received by each group, but the non-expert members, at least, choose not to access it all.

What happens, however, when the information members do access, conflicts with their own perceptions on what is correct? Alternatively, how do members decide who is right where two experts have differing opinions on the same issue? How members deal with such situations is discussed next.

**Balancing Conflicting Information or Ideas**

Within BERG there appeared to be controversy surrounding two issues. The first concerned fire management of the reserve running along the Balcombe Estuary. Two schools of thought exist. One would have the group clear all the rubbish from the ground

to prevent fire. The other would have the group let the bush regenerate naturally and then have controlled burns.

With a degree in environmental management and through her work with the National Trust, Lisa (BERG, non-expert) had a good understanding of the ecology of the local area and of burn regimes. According to her, the second management option was the one currently favoured in bush regeneration. She believed, however, people largely followed their own ideas on this issue:

> *"People like to pull things out to see how much work they have done...People do what they personally feel is right with little resorting to established principles."*

Fred (BERG, non-expert) admitted he had his own ideas about fire management, but stated:

> *"I am still tossing up what is best...I generally rely on Liz a lot for this sort of thing".*

The second controversial issue for BERG involved the recently commenced Streamwatch monitoring. At the time of interviewing, sampling had been occurring over a number of months, spaced one month apart, but with little collation or analysis of the data. The consensus among the interviewed members from BERG was that too much uncertainty existed in their sampling methods for them to gain an understanding of the estuary's health.

Lisa, while not an expert in invertebrate sampling of streams, had a good understanding of biological sampling techniques and experimental design. She again noted flaws in BERG members' methods and understanding:

> *" Members involved [in Streamwatch] rely very much on advice from others...Ultimately though, they are in this situation on their own and left to their own devices...It is very much learning by trial and error."*

Peter (BERG, expert) acknowledged that because of the uncertainties in their methods, he was unsure about the quality of data BERG was producing for Streamwatch.

Part of the problem appeared to be in the one-day workshop on stream monitoring run by Streamwatch. This workshop is run for most groups wanting to become part of the Streamwatch program. BERG's Fred, Penny and Peter all remarked that what they thought they understood from the workshop and what they found when putting it into practice were different things. Referring to the Streamwatch workshop Peter said:

> *"The information from the experts is accepted, it is just how each interpret the information from the limited tuition they receive that is the problem."*

A member's first-hand experiences were also important in circumstances of information conflict. John and Tom (DRI, non-experts) both emphasised their reliance on first-hand experience or asking questions of others with first-hand experience when it come to weighing up conflicting information. Science's lack of influence is expressed in Tom's statement:

*"Science only comes into it [conflict] as a back up to any first-hand experience... I rely on what I have seen and know to choose what I think is the correct theory. Generally the science behind the theory does not enter the equation."*

(The evidence here is also applicable to the next question on formal versus informal learning.)

When it came to science per se, Paula (DRI, expert) claimed that even for people such as the associate members who are interested in dolphins, the science involved in discovering the facts was of little interest to them:

*"The average person does not understand research methodology, though it [understanding] is growing...Information is mostly disseminated in the field where its purpose sinks in better."*

When it came to conflict over matters of bush regeneration, many in TCA seemed to disregard the standard bush regeneration techniques told or shown to them. One member had been pulling out what he thought was a weed only to be told later it was a native burr. To him it was a "nuisance plant" and he admitted that most times, especially when the coordinator was not around, he still pulled it out.

According to the TCA members interviewed, another two members who lived close by become annoyed by the "experts" who told them how to go about fixing up their foreshore. They stopped coming to the appointed working bees and came over on their own, at a different time, and weeded the way they thought fit.

Alan, the Coastcare expert, identified division within and between many groups concerning various issues. These included management issues and conflicts between the group members and the Coastcare coordinators. This latter point he said, was apparently a problem with TCA.

Evidence from all three groups suggests scientific rationale plays little part for non-expert members in providing a solution to a controversial problem. Short of trusting one person over another, it appeared whenever a conflicting issue arose, members' pre-existing ideas provided them with an answer that, to them, was a logical solution to the problem. The next question reveals the environments in which members of these community groups learned best.

## Formal Versus Informal Learning

**Question: what is the role of official or formal learning and knowledge versus the informally gained knowledge that is part of an on-going human social process?**

Formal learning in this study is defined as learning that occurs in workshops, from literature and approved courses. For example, intentionally attending a members' meeting to hear a speaker talk on dolphin conservation or weed management was considered a form of formal learning.

Informal learning refers to learning that occurs in the field, from trial and error or first-hand experience with a problem. It also refers to learning that occurs in social conversation, either during or outside of official member events. This may occur during meetings, working bees, research trips or any form of social gathering. For example, asking a fellow worker or on-hand expert whether a particular plant is a weed was considered a form of informal learning.

A large amount of learning appeared, from participant-observation, to occur in an informal manner, largely through first-hand experience during working bees or research trips. Learning was a hands-on experience for many members. Much of the formal learning occurred through workshops and other training courses. The quotes that follow emphasise this.

Joan (BERG, non-expert):

> *"I learn as I go by getting out and doing it."*

Penny (BERG, non-expert): Regarding Streamwatch monitoring:

> *"I don't think we are doing it properly with testing for the macroinvertebrates...There are differences of opinion – we are all unsure about this – we are learning as we go."*

Peter (BERG, expert):

> *"Much of what we do [in BERG] is our own ideas and initiative. We learn by our mistakes."*

An example of such an initiative occurred with Peter's idea for erosion control. Peter came up with the idea of placing sandbags over the eroded areas with native plants in them. When he found out about the method used by the environment consultant (see under 'Outside Help', p.45), he discarded this idea as impractical.

As Lisa previously emphasised when talking about BERG's Streamwatch monitoring, learning was very much a question of trial and error.

All TCA members, including the group leader, accepted that formal learning for them played a negligible role. They had an initial introductory workshop, but following this, nearly all learning had been hands-on. As one member put it:

> *"We have learnt from simply doing it."*

The majority of members learnt most from informal contexts. Getting their hands dirty and seeking assistance from peers were the main ways this happened. Formal learning did occur, but its importance appeared minimal. There was one other method, however, that appeared important in the learning process – socialising.

**Learning Through Conversation**

Many members' or group problems seemed to be solved or, at least discussed, through social conversation. This was observed especially during working bees and research trips.

DRI held monthly associate meetings that provided both a formal and informal learning environment. At each meeting, speakers from relevant disciplines presented a talk. The talks ultimately generated in-depth discussions amongst those present at the meetings on the speakers' and other related topics. The meetings also provided a forum to present results from any recent research of DRI or others. These meetings gave members an opportunity to converse in an informal manner and often much was gained from doing so.

Both Emma and Liz (DRI, non-experts) said they also learnt a lot from the conversations that took place while volunteering in the DRI office. As Emma maintained:

> *"...the information is free flowing, flying back and forth constantly. We are in constant contact with all the current happenings within the group."*

One example of such a criss-cross conversation occurred during the interview of Emma and Liz. Someone in the office wanted to know how dolphins see underwater. In a short time the debate spread throughout the entire office until eventually Jeff Weir, the Director, put his head out of his office and answered the question. More questions followed his answer, and so it went on.

**Summary**

When seeking information, most members turned to a few trusted members of the group, or those closely associated with it, for help. This helps explain why most learning by members in this study occurred informally. First-hand experience, seeking assistance from trusted experts and social conversation were the primary forms by which this happened. Formal learning, while present, appeared effective only when it involved hands-on experience or personal contact with people.

The final question dealt with in this study is the level of environmental knowledge possessed by each member relative to the local marine and coastal environment. How this knowledge or awareness extrapolates into broader marine and coastal issues is also assessed.

## Environmental Knowledge

The first question asked under this heading concerned the members' interest in the ecology surrounding the work they did with their group. This is revealed below under 'Ecological Interest'. The second question examined the extent of members' understanding regarding both the local and wider marine and coastal environment. This is discussed under the heading, 'Knowledge of the Big Picture'.

### Ecological Interest

**Question: Are the members interested in the ecological issues surrounding their work?**

The concerns and qualifications of BERG members would suggest a degree of interest exists in the ecology of their work. For example, Fred was a member of a field naturalist club and a subscriber to popular science and bird-watching magazines. Penny is a keen bushwalker with an interest in native flora. Listening to conversations during working bees conducted by either of the Coast Action groups, however, provided little to indicate an interest in ecological issues of any type.

Alan (expert) believes the following:

> *"Some have a genuine concern for the environment and an understanding for what is happening in the marine environment. Others are still concerned, but are just coming along to do their bit."*

In contrast to the two Coast Action groups, members of DRI often conversed about issues such as dolphin biology and Port Phillip Bay ecology. Other issues like marine pollution also arose.

As mentioned, Lisa was the exception amongst the Coast Action non-experts. She said she had sought and read management plans for the area and books on plants, bush regeneration and local history. She also at one stage sought out an entomologist to assist the group with the identification of invertebrates collected during their stream monitoring.

Amongst the Coast Action groups there seems more of a concern for the environment rather than an understanding of or passionate interest in it. By contrast, the conversations

witnessed around DRI non-expert members suggests a passionate interest in, and a sound understanding of, the marine environment and the problems it faces.

**Knowledge of the 'Big Picture'**
**Question: How does an individual's recognition of local environmental issues extrapolate to a broader knowledge of marine and coastal management?**

Wilbur (expert) is a coordinator with MCCN. Part of his mission as coordinator is to raise amongst the public an appreciation and understanding of the greater marine ecosystem. Wilbur believes very few new members of community groups go on to be active participants in the group's work. Fewer still ever gain an extensive knowledge of the subject area with which the group is concerned. This is despite the existence of a considerable amount of science, particularly ecology, underlying much of the work of environmental community groups. Referring to members' understanding of the marine environment, Wilbur said the following:

> *"For most [members] it is like driving a car without knowing how the engine works".*

Taking the three groups as a whole, the ecological knowledge of the southern oceans and the environmental issues facing it appeared limited. There was, however, a clear distinction between the Coast Action groups and DRI. The non-expert members of DRI had a distinctly better knowledge and understanding of the environmental problems facing the southern ocean than the non-experts from the Coast Action groups. These

members possessed only a scant understanding and awareness of existing environmental problems – a level of knowledge akin to that one may gather from reading the first paragraph of a newspaper article.

While not denigrating community group members, Wilbur, the MCCN coordinator, thinks that at present the majority of members lack a deep understanding of marine ecosystems and how their work is related to the function of these ecosystems:

> *"Community groups tend to have their own focus or interests that relate to the local environs...They are often NIMBYs [Not In My Back Yard] and few ever get involved in the political side of the debate."*

For example, when asked what he felt was the greatest environmental threat facing our southern oceans, Fred (BERG), could not suggest one. He was aware of the existence of a pollution problem, but knew no details.

Joan (BERG) was aware of many of the southern ocean's problems including pollution, overfishing and she mentioned also the controversy at Wilson's Promontory National Park where many people are worried about the effect a proposed resort for the park will have on the marine ecosystem. As with Fred though, she was aware only of the existence of the problems with little understanding about why the problems existed.

Lisa (BERG) again proved the exception – to a degree. She had a good understanding of local terrestrial ecology and, to some extent, of the local marine environment. She

highlighted both commercial and recreational overfishing as a primary concern. There was at the time, considerable controversy in Port Phillip Bay and the surrounding coastal areas about the impact of recreational fishing. Lisa's understanding of this problem was sound. Her knowledge of the southern ocean, however, demonstrated an awareness similar to other Coast Action members.

TCA members all admitted, as one member put it, to knowing "little or nothing" about the environment of the southern ocean. Generally, they all thought humans were having a bad effect on the marine environment, but none could give any detail on what those effects were. One member stood out by mentioning the local overfishing of shark and the controversy over scallop dredging occurring in Port Phillip Bay. He had his own opinion that the dredging for scallops "had to be doing damage". He admitted there was no scientific rationale for his opinion, it was just something that seemed wrong.

All DRI members interviewed had a relatively solid understanding and knowledge of many aspects of the southern ocean. One salient feature of their knowledge was that it nearly always related, in some way, back to dolphins or whales.

John (DRI, non-expert) stated:

> *"People kick up a fuss about oil on the Great Barrier Reef, but think nothing of such things occurring in the southern ocean...one of the biggest threats facing whales and dolphins is the building of oil platforms in whale nurseries."*

Tom (DRI, non-expert) thought the fishing techniques, longlining lining and drift netting were major problems:

*"There are the whales and dolphins still getting trapped or caught."*

Emma (DRI, non-expert) knew a lot about the proposal for a Marine Protected Area in Port Phillip Bay and part of the waters outside. Her main concern here was that the park proposals would not adequately cover the dolphin breeding and feeding grounds in the southern part of the bay. She was also aware of some of the issues surrounding the recent proposal for the Great Australian Bight Marine Protected Area.

Both Emma and Liz (DRI) possessed a broad understanding of local issues concerning the marine environment. These included pollution, increasing and unregulated tourism, overfishing and the impact of exotic marine organisms. They continually related each of these issues back to their concerns for the welfare of dolphins.

All experts interviewed had a sound knowledge and understanding both of the southern ocean's environmental problems and its ecosystem as a whole. Some of the major issues facing the southern ocean raised by the experts included the following:

- impact of global warming and the effects this will have on krill populations and on the ecosystem as a whole:
- whaling;
- overfishing;
- aquaculture; and
- habitat destruction.

All members interviewed had some concern for the environment, DRI members more so than those of the Coast Action groups. Another distinction between DRI and the Coast Action groups appeared when members' understanding of the local and wider marine and coastal environment was considered. While neither non-expert DRI nor Coast Action members had a good knowledge of the wider marine and coastal issues, members of DRI did have a reasonable knowledge of the local issues.

## Summary of the Research Findings

**Motivations for Joining a Group**: Four main emotional triggers prompted members to join their groups. These were environmental concern, altruism, social fulfilment and career development.

**Search and Selection of Information**: When seeking information, other people were the most accessed and effective source of information for members of these community groups. Written material was rarely chosen. When it came to balancing conflicting opinions, however, members pre-existing ideas were often the most dominant influence.

**Formal Versus Informal Learning**: Most learning by members occurred informally. First-hand experience, seeking assistance from trusted experts and social conversation were the primary forms by which this happened. Formal learning, while present, had a minimal influence.

**Environmental Knowledge**: All members showed some concern for the environment, DRI members more so than those of the Coast Action groups. When an understanding of the local and wider marine and coastal environment was considered, neither DRI nor the

Coast Action members had a good knowledge. DRI members, however, had a reasonable knowledge of the local issues.

## Limitations of Results

There were a number of factors that may have influenced the results of this study. Two of these taken into consideration when analysing the results are discussed below.

During the focus group held with TCA, there appeared a reluctance on the part of two members to speak openly, though this could have been due to distractions of other visitors who stopped to chat during the tea-break. In addition, the day was sunny, hot (around 35 degrees Celsius) and uncomfortable. This may also have contributed to the lack of enthusiasm towards the discussion. Cross discussion therefore, was limited and not as conversational as hoped for. For this reason only a small number of ideas were discussed amongst the group as a whole, giving little opportunity for various opinions to be heard and influenced by other members.

Due to practical limitations on interview location, interviews were conducted in a variety of places. As described in Denzin (1970, p.133), different interpretations of the questions could have arisen as a result, hence influencing the interviewees' answers.

Chapter 5, *Discussion*, draws conclusions from the data. It discusses these in relation to future research and recommendations for action relative to promoting and encouraging participation of community groups in the management of the marine environment.

# CHAPTER 5

# DISCUSSION

## Overview

The Australian government and others bodies, including the UN, state that they want the public to play a greater role in the management of our marine and coastal environment. This thesis has attempted to gain an insight into the effectiveness of environmental community groups in this participatory role. The research focussed on the manner in which members of environmental community groups learn about the ecology of the environment in which they work. The study examined also the emotional triggers that motivate people to join these groups and members' levels of knowledge of both the local and larger marine and coastal environment. Specifically, the thesis addressed the following broad questions:

- What are the factors that motivate people to join environmental community groups?
- How do members of these groups select and use information?
- What are the roles of formal and informal learning?
- What are members' levels of environmental knowledge regarding the marine and coastal environment?

Three groups were studied over a six week period. Data were gathered and analysed largely through interviewing and participatory-observation. The major findings were:

- Environmental concern, and altruistic tendencies toward the community were the main motivations for people joining environmental community groups. Social fulfilment was a motivation important in long-term commitment to a group.
- Learning was largely passive through hands-on experience and personal contact. Written material was rarely utilised.

- Scientific rationale had little influence on decision making, both within the group and for individual members. Members' existing notions played a larger role when trying to understand or make decisions on conflicting scientific or ecological issues.
- Both formal and informal learning played a role in members' lives relative to their group's work. Formal learning tended to be successful only when it involved hands-on experience or a social atmosphere.
- Awareness and understanding of environmental issues facing both the local and larger marine environment were significantly better amongst the younger age bracket. A good understanding of the issues and facts concerning the greater southern ocean, however, was limited amongst all non-expert members.

This chapter discusses each of the above conclusions, in the order they appear, under the following headings:

- 'Social Fulfilment – An Important Element';
- 'How Members Learn';
- 'Balancing Scientific Opinion';
- 'Formal Versus Informal Learning'; and
- 'The Big Picture'.

# Conclusions

### Social Fulfilment – An Important Element

Despite the large age gap between most members of the Coastcare groups and DRI, there were two reasons common to all groups that motivated people to become members. These were a concern for the environment and a desire to give something back to the community.

A third motivation, social fulfilment, was generally not one of the reasons for initial involvement, but appeared to play an important bonding role after joining the group. Socialising for the members of this study, while seemingly unconnected to the ultimate mission of their groups, may be an important element in attracting and maintaining group numbers. Involving more people will lead to a greater diversity of skills and ideas and thus, an increased chance of success for the philosophy of public participation. A good social atmosphere should also facilitate information exchange.

### How Members Learn

It was rare for members of the three community groups to actively seek information. Some of the younger members, however, proved to be exceptions. Most learning though, regardless of age, seemed to occur passively. This happened either through social conversation or hands-on experience when working as a volunteer. Social discourse amongst members appeared important as a way for expert and non-expert members alike to work through many problems faced by the group. If additional assistance or information was required, it was usually sought from the one or two members or closely

associated people with expertise or skills in the groups area of concern. Such conduct emphasises the importance of social fulfilment and establishing some form of rapport within the group. This is similar to findings in research by Carr (1993) and Rogers (1983) that farmers were more likely to accept advice from other farmers or people within their own group.

The written material received by all three groups – *Waves*, *Ripples* and the Coastcare newsletter, *Coastline* – which contained up to date information on marine and coastal issues, rarely reached the average member. These and other relevant journals or books were purchased or received by people like presidents and secretaries and, more often than not, stayed with them. While costs of copying and distribution may be inhibitory factors to disseminating such information to all members, there also appeared a lack of incentive on the part of individual members to actually seek the information. As David, DRI's president, emphasised, even though DRI had a good research library, it was rarely used by the associate members – "people do not have the time". It appears that much of the time and resources invested in producing written material for such community groups is ineffective, at least with regard to educational materials and, in some respects, many of the newsletters and newsheets like *Waves* and *Ripples*. This is not to say such material should not be produced for these groups. People, such as the 'expert' interviewees, received them, read them and found them useful. The non-expert members who failed to utilise the information would possibly benefit more from other methods of information transfer.

From this evidence it would appear that raising awareness and understanding could be better achieved by devoting more resources to assisting and encouraging activities such as workshops, and having experts visit and provide hands-on instruction. For example, the day a local environment management consultant helped BERG with erosion control measures, it became more than a hands-on learning experience. Learning also occurred through the lively discussion that evolved from the instruction given by the consultant.

Physically doing an activity or interacting and communicating on a personal level with people appeared the most effective way these community group members learned. Each member interviewed enjoyed working within their group. For many it was a direct link with like minded people. For others it was an indulgence in their own personal passion – such as a love of dolphins. In all cases learning in these environments was enjoyable. Therefore, members' enjoyment of learning could have self-perpetuated the learning process. That is, by enjoying learning, they were more willingly to learn. Members had not joined the group to partake in tracking down and reading newsletters or other similar informative material.

**Balancing Scientific Opinion**

When it came to balancing conflicting scientific doctrines, members' decisions seemed not to be based on any analytical or scientific theorem. Their own preconceptions were often the dominant influence. This is despite the fact that the majority of an environmental community group's activities are based on science or a product of it. Members' preconceived ideas seemed to be formed from first-hand experience or from

what they were told by other experienced people who were trusted or known to be skilled in the relevant area. Their ideas were based on what they felt was right. They discovered mistakes through a process of trial and error.

This behaviour was clearly evident with BERG members and their methods for running the Streamwatch program (and to a lesser extent their revegetation practices). Their understanding of established scientific principles regarding stream sampling was only rudimentary. They knew this, but were learning as they went. They applied a method they thought to be right. As they progressed, their mistakes became evident and they corrected them as they saw fit. This type of learning by BERG and most group members interviewed supports the theory of constructivist learning.

**Formal Versus Informal Learning**

Both formal and informal learning can have an influence on raising awareness and understanding of the problems and solutions faced by environmental community groups. Members in this study did most of their learning in informal contexts. Both forms, however, appear effective only when they involve hands-on experiences or social contact with people. As it happens, most informal learning involves these two factors. Relying on written material as an instructional or educational medium appears ineffective in the majority of instances.

The evidence for this becomes more obvious when you assess the level of members knowledge regarding marine and coastal ecology. Overall non-expert members'

knowledge from all three groups was limited. This was evident more so in the Coast Action groups. Their understanding of the ecology and environmental issues facing our marine systems often came across more as an emotional attachment than as a practical, scientifically-based understanding. For instance, they may care for a dolphin's welfare because they love dolphins not because dolphins are a keystone species and an essential link in a threatened ecosystem.

Much scientific and ecological (yet layman-friendly) information concerning the local and greater southern ocean is contained in the rarely-read general newsheets and other common literature sent to the community groups. Those members that did read widely on such matters had a considerably better understanding of the issues. These members included each expert, and many of the younger non-expert members.

The majority of members do not willingly read such information. Instead, they partake in workshops, working bees and other group events where learning is first-hand and part of a social activity.

**The 'Big Picture'**

The results suggest the non-expert members remain unaware, to some extent, that the work they do has an effect on the larger marine environment. That is, they fail to see the marine and coastal ecosystem from a holistic viewpoint. If governments are to increase understanding of these larger issues, it would appear more practical to incorporate such information and learning into the events that members involve themselves in willingly.

Such a scheme, however, should not intend to refocus a community group or individual's attention away from the local issue. But it should aim to at least make members aware that they are involved in repairing, maintaining or protecting a crucial link that is connected to a larger system.

## Limitations

Having assessed only three groups it is difficult to say whether the conclusions reached above can be applied to all environmental community groups. The results of this study, however, have provided a basis from which to continue any further research in this area. To delve deeper, a larger number and greater range of these groups would need to be studied before any major conclusions can be drawn. The reasons found for joining the groups, however, are supported in the literature so it is probable that motivations which applied to the members involved in this thesis apply for most similar community groups.

There are areas that future research could explore in more detail to develop further some of the conclusions drawn here. I have said that a single workshop on how to carry out Streamwatch was insufficient to understand the vagaries and scientific principles of stream monitoring. This may have been a 'one-off' case of a poorly-run workshop. Alternatively, lack of resources, poor instruction or course design could have hindered effective learning by the workshop's participants. Individual assessments of the workshops themselves are needed to reinforce the findings of this study.

Further investigation of interviewees may provide the opportunity to increase the understanding of each member's feelings and ideas about how they learn and how they feel they learn best.

## Recommendations

The results suggest that in the two Coast Action groups at least, few people actively seek to expand their knowledge past what is directly relevant to the work they do with the group. Most of what they do learn is gained from first-hand experience and not from the literature produced with the aim of increasing awareness of our marine environment. Plans for promotion of southern ocean issues and overall environmental education within environmental community groups should take this into account. There will probably not be a single best way to make this effective, but it is apparent that relying on literature to raise their awareness and understanding is ineffective for the majority of members.

Concern for the environment and desire to help the community are feelings that already exist in people before they become involved in a community group. The social aspect appears to become important later. This is one area that groups themselves and the coordinating bodies such as Coast Action and MCCN should nurture, develop and promote in order to increase participation and therefore skills and diversity of ideas. This could include social evenings with other similar groups or with guest with speakers - any sort of function that provides a social atmosphere and also facilitates learning.

## Further Research

It was not clear whether the members' current and somewhat limited knowledge of marine ecology would make them less capable of making informed decisions regarding marine and coastal management issues. It would be interesting to compare such findings with Petts' (1997) research in which she suggests that as long as the information is supplied in a form that is digestible and balanced, people are able to make rational and informed decisions.

As mentioned above, an evaluation on the effectiveness of workshops, like those held to introduce groups to Streamwatch, could provide valuable information into ways to improve their effectiveness.

There are three main conclusions to be drawn from this study. First, there appears to be a limited understanding amongst many community group members of the mechanisms of marine and coastal ecosystems. Second, a concern for the marine and coastal environment exists and there is a willingness to learn more about it. Finally, attempting to raise the level of understanding among non-expert members through an increased provision of literature is likely to be ineffective. Members of these groups do not join to formally increase their knowledge of marine ecology. They join because of a concern for the environment, to do something for the community and to be part of a social group. These factors should be taken into consideration when developing methods to raise public awareness and understanding of any natural environment.

Some of the ways to raise awareness and understanding could include:

- field trips to reefs and other local marine ecosystems. This could be done informally with a local biologist or through existing ecological tours;
- encouragement of excursions to marine education centres like the one at Queenscliff, Victoria. This could be carried out as a single group or one made up of other Coastcare groups and interested members of the public.

Coastcare groups, alone or combined, could also organise these or similar activities as part of an awareness raising campaign for the general public.

All the above activities include the element of social interaction, an element that appears important in the learning proccess for members of groups such as Coastcare.

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# APPENDIX

# APPENDIX

## Interview Protocol

A set of standard questions were asked to minimise leading questions. Outside these questions, however, the direction of each interview was dictated by the interviewee.

The first question asked was what the emotional trigger was that first motivated the member to join the group. Members were then asked to describe in greater detail certain aspects of their answers.

Questions two and three were based on:

- selection and use of information; and
- formal versus informal learning.

Together they were used to examine how members of environmental community groups learnt. They involved a series of sub-questions which included the following:

- What information do members receive or have access to that assists them in the work they do with the group?
- What do members rely on most when wanting to learn anything new relevant to the group's work?
- How much literature do members read relevant to this work?
    - What is this and how do members access it?
- Have members heard of and do they read the newsletters *Waves* and *Ripples* put out by the Marine and Coastal Community Network?

- Have members ever been confronted with an issue that is controversial or contradictory to the normal practices performed by the group? (This question was then expanded on to assess if any controversial scientific issues had arisen).
- Do members feel the need to actively seek information of concern to the groups activities?

The above questions were explored in greater detail, especially with regard to any information based on science or the environment.

Question three was introduced into by attempting to associate environmental problems or events within Port Phillip Bay to the work being done by their group. These problems or issues included the proposed Marine Protected area for the southern end of Port Phillip Bay, the scallop dredging and pollution. Members were eventually asked the broader question - what is currently the greatest threat to the oceans? Members' answers were then explored in detail and their knowledge of the southern ocean assessed from this.

On some occasions, where no ideas came to mind, prompting was necessary by mentioning a particular issue or phenomena. I did not offer an opinion on the issue, I merely mentioned its existence, asked if they knew of it and what they thought about it.